Gilead Quadrangle, Maine

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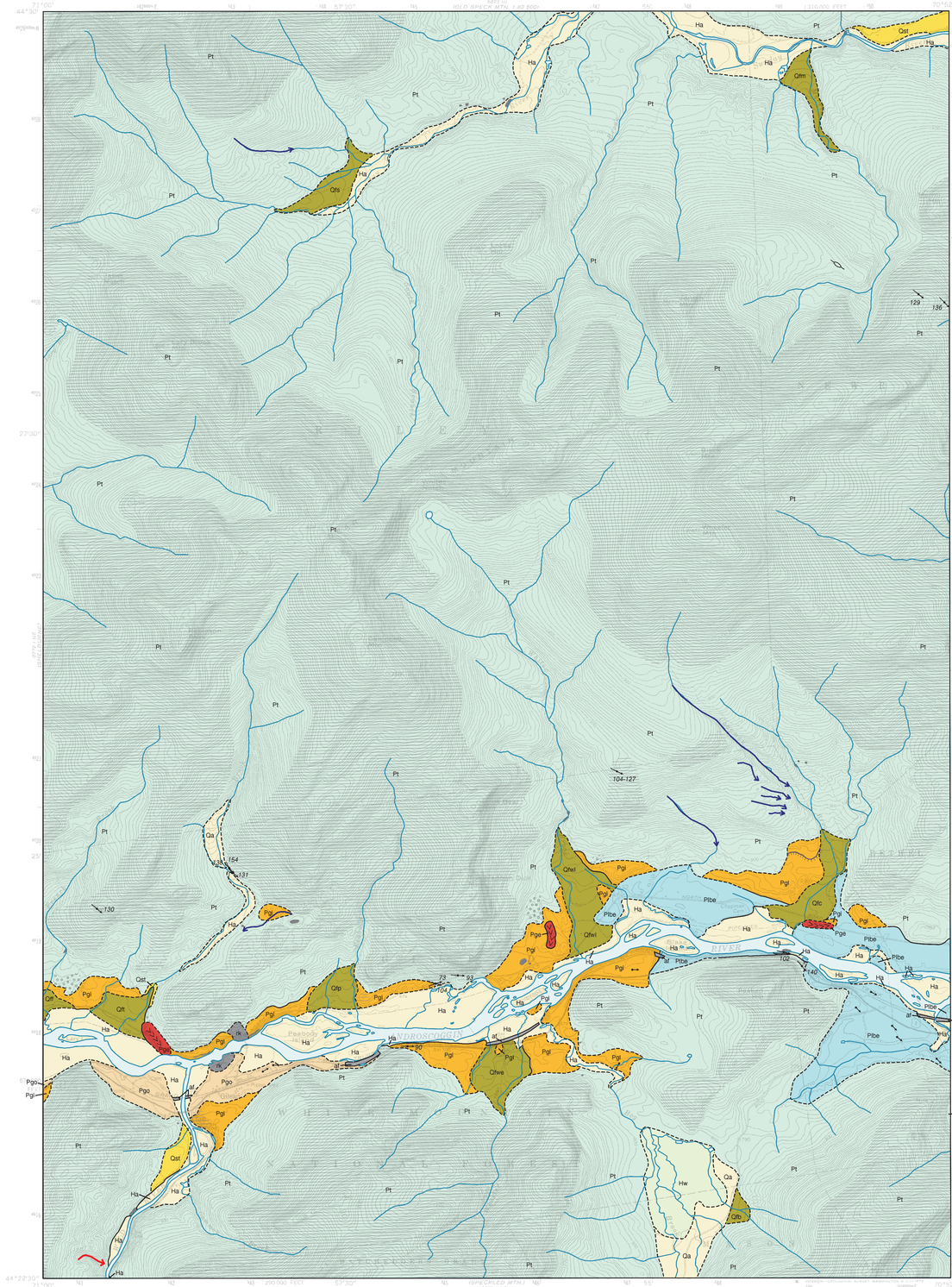
For additional information,
see Open-File Report 03-58.

Surficial Geology



SOURCES OF INFORMATION

Surficial geologic mapping of the Gilead quadrangle was conducted by Woodrow B. Thompson in 1982-83 for the Maine Geological Survey's sand and gravel aquifer mapping program and in 2002-3 for the STATEMAP program. Additional data were collected during the 1980's and 1990's by W. B. Thompson, including information from pipeline construction in 1998.

Quadrangle Location

SCALE 1 : 24,000

1 0 1 MILE
1000 0 1000 2000 3000 4000 5000 6000 7000 FEET
1 0 1 KILOMETER

CONTOUR INTERVAL 20 FEET

TRUE NORTH

Topographic base from U.S. Geological Survey Gilead quadrangle, scale 1:24,000 using standard U.S. Geological Survey topographic map symbols.

The use of industry, firm, or local government names on this map is for location purposes only and does not impute responsibility for any present or potential effects on the natural resources.

Ha **Stream alluvium** - Gravel and sand deposited on flood plains of modern streams. Unit may include some wetland areas.

Hw **Wetland deposits** - Peat, muck, silt, and clay in poorly drained area of Bog Brook valley.

Qst **Stream terrace** - Sand and gravel terraces in Wild River and Sunday River valleys.

Qa **Stream alluvium** - Gravel and sand deposited on a steeply sloping alluvial surface by Twitchell Brook and in the Bog Brook valley. Age may range from early postglacial to recent.

Qfs **Sunday River fan** - Coarse stream gravel deposited in early postglacial to recent time along the steep headward part of Sunday River valley.

Qfm **Merrill Brook fan** - Gravel deposited in fan along lower part of Merrill Brook in Sunday River valley.

Qff **French Brook fan** - Gravel deposited in fan along lower part of French Brook in the Androscoggin Valley.

Qft **Twitchell Brook fan** - Gravel deposited in fan along lower part of Twitchell Brook in the Androscoggin Valley.

Qfp **Peabody Brook fan** - Gravel deposited in fan along lower part of Peabody Brook in the Androscoggin Valley.

Qfwl **Whites Brook fan** - Gravel deposited in fan along lower part of Whites Brook in the Androscoggin Valley.

Qfc **Chapman Brook fan** - Gravel deposited in fan along lower part of Chapman Brook in the Androscoggin Valley.

Qfwe **Wheeler Brook fan** - Gravel deposited in fan along lower part of Wheeler Brook in the Androscoggin Valley.

Qfb **Bog Brook fan** - Sand and gravel deposited in fan on east side of Bog Brook valley.

Pgo **Outwash deposits** - Sand and gravel deposited by glacial meltwater streams in the Androscoggin Valley. May include deltaic sediments.

Pge **Esker deposits** - Sand and gravel deposited by meltwater streams in glacial ice tunnels in the Androscoggin Valley.

Pibe **Glacial Lake Bethel deposits** - Deltaic sand and gravel deposited in a glacial lake that occupied part of the Androscoggin River valley. The lake level was controlled by one or more spillways at ~ 690-700 ft elevation in the Bethel area to the east.

Pgi **Ice-contact deposits** - Sand and gravel deposited in contact with remnants of glacial ice in the Androscoggin River and Twitchell Brook valleys.

Pt **Till** - Loose to very compact, poorly sorted, massive to weakly stratified mixture of sand, silt, and gravel-size rock debris deposited by glacial ice. Locally includes lenses of waterlaid sand and gravel.

Bedrock outcrops / thin-drift areas - Ruled pattern indicates areas where outcrops are common and/or surficial sediments are generally less than 10 ft thick (mapped partly from air photos). Gray dots show individual outcrops.

rk **Bedrock** - Area of nearly continuous bedrock outcrop.

af **Artificial fill** - Earth, rock, and/or man-made fill along roads and railroads.

Contact - Boundary between map units. Dashed where inferred.

Scarp - Scarp separating adjacent levels of unit Pgi in the Androscoggin Valley.

135 **Glacial striation locality** - Arrow shows ice-flow direction(s) inferred from striations on bedrock. Dot marks point of observation. Number is azimuth (in degrees) of flow direction. Where relative ages could be determined, flagged direction is older.

Dip of cross-bedding - Arrow shows average dip direction of cross-bedding in fluvial deposits, which indicates direction of current flow. Dot marks point of observation.

Meltwater channel - Channel eroded by glacial meltwater stream. Arrow shows inferred direction of former stream flow.

>>>>> **Crest of esker** - Shows trend of esker ridge. Chevrons point in direction of meltwater flow.

Area of many large boulders, where observed. May be more extensive than shown.

Path of 1998 landslide.

USES OF SURFICIAL GEOLOGY MAPS

A surficial geology map shows all the loose materials such as till (commonly called hardpan), sand and gravel, or clay, which overlie solid ledge (bedrock). Bedrock outcrops and areas of abundant bedrock outcrops are shown on the map, but varieties of the bedrock are not distinguished (refer to bedrock geology map). Most of the surficial materials are deposits formed by glacial and deglacial processes during the last stage of continental glaciation, which began about 25,000 years ago. The remainder of the surficial deposits are the products of postglacial geologic processes, such as river floodplains, or are attributed to human activity, such as fill or other land-modifying features.

The map shows the areal distribution of the different types of glacial features, deposits, and landforms as described in the map explanation. Features such as striations and moraines can be used to reconstruct the movement and position of the glacier and its margin, especially as the ice sheet melted. Other ancient features include shorelines and deposits of glacial lakes or the glacial sea, now long gone from the state. This glacial geologic history of the quadrangle is useful to the larger understanding of past earth climate, and how our region of the world underwent recent geologically significant climatic and environmental changes. We may then be able to use this knowledge in anticipation of future similar changes for long-term planning efforts, such as coastal development or waste disposal.

Surficial geology maps are often best used in conjunction with related maps such as surficial materials maps or significant sand and gravel aquifer maps for any one wanting to know what lies beneath the land surface. For example, these maps may aid in the search for water supplies, or economically important deposits such as sand and gravel for aggregate or clay for bricks or pottery. Environmental issues such as the location of a suitable landfill site or the possible spread of contaminants are directly related to surficial geology. Construction projects such as locating new roads, excavating foundations, or siting new homes may be better planned with a good knowledge of the surficial geology of the site. Refer to the list of related publications below.

OTHER SOURCES OF INFORMATION

1. Thompson, W. B., 2003, Surficial geology of the Gilead 7.5' quadrangle, Oxford County, Maine: Maine Geological Survey, Open-File Report 03-58.
2. Thompson, W. B., and Locke, D. B., 2003, Surficial materials of the Gilead quadrangle, Maine: Maine Geological Survey, Open-File Map 03-56.
3. Neil, C. D., 2003, Significant sand and gravel aquifers of the Gilead quadrangle, Maine: Maine Geological Survey, Open-File Map 03-99.
4. Thompson, W. B., 1979, Surficial geology handbook for coastal Maine: Maine Geological Survey, 68 p. (out of print).
5. Thompson, W. B., and Borns, H. W., Jr., 1985, Surficial geologic map of Maine: Maine Geological Survey, scale 1:500,000.